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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,381	03/10/2004	Jorg-Reinhardt Kropp	MAIKP125US	3239

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EXAMINER	
STEIN, JAMES D	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/797,381	KROPP, JORG-REINHARDT	
	Examiner	Art Unit	
	James D. Stein	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3,6,10 and 14-16 is/are rejected.

7)☒ Claim(s) 4,5,7-9,11-13 and 17-20 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 4/8/04 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 0304.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 6, 10 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art [DE 100 64 599] to Muller et al. and further in view of [USPAT 6,741,777] to Jewell et al., which discloses a similar bidirectional optical coupler.

With regard to claims 1 and 14, Muller et al. disclose a related bidirectional transmitting and receiving device. The embodiment shown in fig. 6a shows a transmitting component (diode 2e) comprising an emission area of a first size (see figs. 6b and 6c); a receiving component 3e comprising a receiving area of a second size (see figs. 6b and 6c); and coupling optics configured to couple light between the transmitting component 2e a the optical waveguide 6, as shown in fig. 1. The coupling optics comprise a first lens 7, which corresponds to the "second imaging system " as claimed by applicant. Figs 6a-c shows the receiving component located on a plane 52 intermediate the transmitting device 2e; and light emitted by the transmitting device 2e passes through opening 11 or slot 12 (shown in figs. 6b and 6c, respectively) of the receiving component 3e (col. 4 lines 59-67).

Furthermore, fig. 1 shows the first lens 7 to both: a) image light emitted from the transmitting component 2 on an end surface of optical fiber 6, as indicated by the arrow pointing upward, and b) image the light emitted by the optical waveguide 6 onto a receiving area of the receiving component 3, as indicated by the arrow pointing downward (col. 3 line 59- col. 4 line 2). Therefore, said first lens 7 has the same functionality as the "second imaging system" claimed by applicant.

Therefore, Muller et al. disclose the claimed invention except for "a first imaging system" behind said second imaging system which images light emitted by the transmitting component 2 on the plane which contains the receiving component 3. Referencing fig. 8, Jewell et al. disclose a lens 24 for focusing light emitted from the optical fiber 32 onto the detector 26 (col. 2 lines 38-47). Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art to modify the device as taught by Muller to include a "first imaging system" in order to more directly image the light emitted by the transmitting component 2 on the plane which contains the receiving component 3, increasing the coupling efficiency.

With regard to claims 2 and 15, in addition to the rejections of claims 1 and 14 previously discussed above, fig. 1 shows the second imaging system 7 arranged such that an image plane for the imaged light from the end surface of the optical fiber 6 lies on the plane 4 containing detector 3. As was described above, the image plane 3e for the imaged light from the end surface of the optical waveguide 6 (fig. 1) is the same plane 3e as the intermediate plane for the light emitted by the transmitting device 2e. With the insertion of the first imaging system in between the transmitter 2e and the

receiver 3e in the embodiment shown in fig. 6a as described above with regard to claims 1 and 14, all claimed limitations have been disclosed or obviated.

With regard to claim 3, in addition to the rejection of claim 1 previously discussed above, fig. 1 shows the image of the transmitting component on the intermediate plane 3e is imaged within the end surface of the optical waveguide by the second imaging system, lens 7 (col. 4 lines 59-68).

With regard to claim 6, in addition to the rejection of claim1 previously discussed above, the "second imaging system," lens 7 or the "first imaging system" taught by Jewell et al. will inherently cause an enlarged or smaller image at the immediate plane since all lenses warp the light passing through them in some manner, causing the image to change in size. Furthermore, a slight enlargement or compression of the image is clearly within the tolerances of optical lens systems.

With regard to claim 10, in addition to the rejection of claim 1 previously discussed above, slit or opening 12 in receiving component 3 is shown by fig. 6c of Muller to comprise a comparatively small area compared to the receiving area, through which light emitted from the transmitting component passes (col. 4 lines 59-68).

With regard to claim 16, in addition to the rejection of claim 1 previously discussed above, figs. 6a-6c of Muller clearly show the receiving area 3e to be larger than the transmitting area 2e, as claimed by applicant.

Allowable Subject Matter

Claims 4-5, 7-9, 11-13 and 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all

of the limitations of the base claim and any intervening claims. None of the cited prior art discloses or suggests: The device as claimed in claim 1, wherein the light that is emitted from the transmitting component is injected into a comparatively small subregion of the end surface of the optical waveguide, while the light that is to be received and is distributed over the entire end surface of the optical waveguide is imaged onto the receiving area of the receiving component; wherein the image of the transmitting component on the intermediate plane is smaller than one third of the receiving area of the receiving component; wherein the second imaging system comprises a diffractive lens that focuses light at different wavelengths differently, with the intermediate plane on which the light from the transmitting component is imaged being located at the focus of the diffractive lens for the emitted wavelength, so that the light that is emitted from the transmitting component is imaged on the end surface of the optical waveguide, while the receiving component is located away from the focus of the diffractive lens for the received light that is emitted from the optical waveguide at the second wavelength, whereby such received light is imaged at the intermediate plane in such a manner that it is widened again or has not yet been focused; wherein the receiving component is substantially transparent for the wavelength that is emitted from the transmitting component; wherein the first imaging system is formed on one face of a substrate, on whose opposite face the receiving component is arranged or formed; wherein the transmitting component, the first imaging system, and the receiving component are encapsulated with a transparent plastic encapsulation material that forms the second imaging system; wherein the second imaging system comprises a

diffractive lens operable to focus light of differing wavelengths at differing distances therefrom; wherein the diffractive lens comprises a fresnel lens; wherein light from the optical waveguide has a wavelength that is greater than light emitted from the transmitting component, and wherein the intermediate plane is located at the focus of the diffractive lens for the light from the transmitting component, and wherein the intermediate plane is located in front of or beyond the focus of the diffractive lens for the light emitted from the optical waveguide; wherein light emitted from the end surface of the optical waveguide substantially fills an end surface area associated therewith, and wherein the second imaging system is configured to focus the optical waveguide emitted light onto the intermediate plane associated with the receiving area, and wherein the light transmitted from the transmitting component is imaged onto the receiving component via the first imaging system with an area associated with the emission area, wherein the emission area is substantially less than the receiving area, and wherein the transmitted light is further imaged to the end surface of the optical waveguide via the second imaging system with an area thereat that is substantially less than the end surface area.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D. Stein whose telephone number is (571) 272-2132. The examiner can normally be reached on M-F (8:00am-4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James D. Stein

John D. Lee
Primary Examiner